

平成 21 年度（2009 年度）  
一般入学試験(前期) S A 方式

英 語

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【注意事項】

1. 試験開始の合図があるまで、この問題冊子を開いてはいけません。
2. この問題冊子は全 8 ページからなります。試験中に問題冊子の印刷不鮮明、ページの落丁・乱丁及び解答用紙の汚れ等に気づいた場合は、手を挙げて監督者に知らせてください。
3. このページの裏は問題文になっています。問題文を見やすくするため、このページは切り取り線に沿って切り離すことができます。試験が始まったら切り離して使用してかまいません。
4. 試験開始の合図があったら、解答用紙に受験地、受験番号を記入してから解答を始めてください。
5. 試験終了の合図と同時に解答をやめてください。

- 1 次の英文を読んで、設問に答えよ。

## Sound

In the middle ( 1 ), scientists began to do experiments to learn more about air. (A) They used pumps to force the air out of enclosed spaces to produce a vacuum. A vacuum is empty space. It has no particles — or very, very few of them. Robert Boyle, a British scientist, designed an experiment to find out if sound moves through a vacuum. He put a ticking clock  
5 in ( 2 ). He pumped some air out of the jar and still heard the clock ticking. Then he pumped more air out. The ticking grew quieter. Finally, when Boyle had pumped out almost all the air, he could hear no ticking at all. (B) Boyle's experiment demonstrated that sound does not travel through a vacuum. Sound waves need a material to travel through. This material is called a medium.\*

10 ( 3 ) you are in the baseball stand during an exciting game. A ball flies from the mound toward home plate, and you see the batter draw back, swing, and hit the ball high. A split second later you hear the crack of the bat meeting the ball. You notice that the sound of the hit comes later than the sight. Just how fast does sound travel? Sound travels more slowly than light, and it does not always travel at the same speed. Two main factors affect the speed  
15 of sound: the material that makes up the medium — such as air or water — and the temperature. If we know the medium and the temperature, however, we can predict the speed of sound.

You listen to a radio. You hear the siren of a fire truck. These sound waves travel through air, a mixture of gases. Now think about going swimming. You dip below the water's  
20 surface. Someone jumps into the water nearby and splashes water against the pool wall. You hear strange underwater sounds. These sound waves travel through water, a liquid. Sound travels faster through liquids than it ( 4 ) through gases. Sound also travels faster through a medium at higher temperatures than at lower ones. This means, for example, that sound changes speed when it passes from warmer into cooler air, or vice versa.\* ( 5 ) with other  
25 types of wave, the change in speed can cause refraction — change in direction of travel.

【Adapted from “Wave, Sound, and Light”, McDougal Littell Science (ser.), McDougal Littell; 1st ed (2007), pp. 41-43 and Stephen Pople, “Physics for Higher Tier”, New Coordinated Science (ser.), Oxford UP; 3rd ed. (2001), p. 102】

\* 9 行目 medium 媒体

\* 24 行目 vice versa 逆もまた同じ

1. 本文の各パラグラフにつき，内容と一致するものを a～d から一つ選び，記号で答えよ。

(1) 第1パラグラフ

- a. Robert Boyle was the first scientist to produce a vacuum.
- b. As the air was removed from the jar, the ticking of the clock became quieter.
- c. In the end, the ticking clock in the jar stopped.
- d. Air is not considered a medium through which sound waves travel.

(2) 第2パラグラフ

- a. In the baseball stands, you hear the sound of the hit before you see the sight.
- b. Whether or not light travels faster than sound depends on the medium and the temperature.
- c. Air and water are two main factors affecting the speed of sound.
- d. The speed of sound varies according to the medium and the temperature.

(3) 第3パラグラフ

- a. Sound waves traveling through air can be a mixture of gases.
- b. People above water would hear a sound sooner than people underwater would.
- c. Sound travels faster in cold air than in hot air.
- d. The change in the speed of sound can result in refraction.

2. 本文中の下線部 (A) と (B) を和訳せよ。

(A)

(B)

3. 次の下線の語が指すものとして，もっとも適切なものを a～d から一つ選び，記号で答えよ。

(1) ... or very, very few of them. (3行目)

- a. scientists
- b. pumps
- c. enclosed spaces
- d. particles

(2) ..., and it does not always travel ... (14行目)

- a. the ball
- b. sound
- c. light
- d. the hit

4. 本文中の(1)～(5)の( )を補うのに、もっとも適切な語(語句)をa～dから一つ選び、記号で答えよ。

- |     |                  |                  |                 |                 |
|-----|------------------|------------------|-----------------|-----------------|
| (1) | a. 1600          | b. 1600s         | c. 1600th       | d. 1600 years   |
| (2) | a. a sealing jar | b. a jar sealing | c. a sealed jar | d. sealed a jar |
| (3) | a. Suppose       | b. Once          | c. In case      | d. In any case  |
| (4) | a. be            | b. is            | c. do           | d. does         |
| (5) | a. As            | b. For           | c. To           | d. On           |

5. 次の( )内の語の文脈中での意味として、もっとも適切なものをa～dから一つ選び、記号で答えよ。

- (1) (empty) A vacuum is empty space. (2～3行目)
- a. having no end
  - b. full of matters
  - c. containing nothing
  - d. extremely large
- (2) (crack) ... you hear the crack of the bat ... (12行目)
- a. a loud and sharp sound
  - b. a long and deep sound
  - c. a quiet and pleasant sound
  - d. a low and unclear sound

2 次の語(語句)を並べ替えて、与えられた日本語の意味を表わす英文を作れ。

- (1) ( Gravity is / fall downward / to / objects / the force / toward the center of Earth / causes / that ).

重力は、物を地球の中心に向かって落下させる力である。

- (2) ( Animals need water / stored / digest food / in the food / the energy / and / to / release ).

動物は、食物を消化したり食物の中に蓄えられたエネルギーを放出したりするために、水を必要としている。

- (3) ( That / I / you / cannot / with / is / agree / why ).

そういう訳で、私はあなたに同意できません。

3 次の各対話の(1)～(3)の( )を補うのに、もっとも適切なものをa～eからそれぞれ一つ選び、記号で答えよ。

1. A : ( 1 )

B : Yeah, it said rainy over the weekend. The rainy season is here.

A : Oh no. What about our trip to a mountain?

B : ( 2 )

A : ( 3 )

B : They'll have to understand.

- a. It's so hot today.
- b. We'll have to put it off.
- c. Rainy clouds are spreading.
- d. Have you seen the weather report?
- e. What will the kids say?

2. A : ( 1 )

B : I'm tired all the time and can't sleep well. ( 2 )

A : Well, it may be due to the change of season. ( 3 )

B : Thank you for seeing me.

- a. Be sure to eat regularly and get lots of rest.
- b. Be sure to study as hard as you can.
- c. What seems to be the trouble?
- d. May I ask a favor of you?
- e. I don't feel well.

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